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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/646,343	09/18/2000	Sumi Tanaka	197310US2PCT	8744

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EXAMINER
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MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 04/04/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

T.D-4

# Office Action Summary

Application No.

09/646,343

Applicant(s)

TANAKA ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6, 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,383,971 to Selbrede and further in view of U.S. Patent No. 5,294,778 to Carman et al.

3. Selbrede discloses a film deposition apparatus in Figures 1 and 2 comprising: a mounting table (17), a first heating apparatus (31), a first gas supply section (65,67), a movable clamp (29; column 5, rows 51-52) ) and a second gas supply section (41).

In the invention of the Selbrede, the gas flow path extends so as to pass the edge portion of the target object (27) and is provided with a buffer section for controlling the conductance of the gas flow path (43). Selbrede further teaches the use of inert backside gas acting as a film-depositing prevention gas (column 1, rows 1-9) or as a heat transfer medium (column 2, rows 24-27).

The clamp of the invention is shaped like a ring and clamps the entire edge portion of the target object (column 6, rows 10-16) against an inner edge of a tapered surface.

However, Selbrede fails to disclose a second heating apparatus formed separately from the clamp with a gas flow path formed between the two structures or a control section for controlling a heating value of the second heating apparatus.

Carman et al. disclose an apparatus and method for film deposition, which comprises providing multiple heaters to create a predetermined temperature profile across a support platen (column 4, rows 21-33) and a temperature sensing means, so a power control means can adjust the power input to obtain the desired heat profile across the wafer (column 2, rows 7-14). Specifically, Carman discloses providing edge loss heaters (Figure 3, 14 & 16) in locations proximate mounting table (52). Further, the additional

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heater would inherently form a gas flow between itself and the clamp capable of being used as a heat transfer mechanism as disclosed in Selbrede, providing additional means for maintaining a desired heat profile.

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have provided a second heater on the periphery of the mounting table formed separately from the clamp in Selbrede to maintain a desired heat profile across the wafer as taught by Carman et al.

6. With respect to claim 8, which is drawn solely to processing gases for an intended operation, as mentioned above, it has been held that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim. *Ex Parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969).

7. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Selbrede and Carman et al. as applied to claims 1-4, 6, 8-14 above, and further in view of U.S. Patent No. 5,705,223 to Bunkofske.

8. Selbrede and Carman et al. disclose a film deposition apparatus as described above.

However, Selbrede and Carman et al. fail to disclose a backside gas, which can be used as a cleaning gas.

Bunkofske teaches the use of a backside gas used as a cleaning gas for the purpose of removing edge coating formed during deposition which can be detrimental to the manufacturing process and spread contamination to other wafers (column 1, rows 29-36; column 4, rows 47-51).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have provided a backside gas able to act like a cleaning gas in the Selbrede and Carman et al. to remove edge coating detrimental to the manufacturing process and capable of spreading contamination to other wafers as taught by Bunkofske.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Selbrede and Carman et al. as applied to claims 1-4, 6, 8-14 above, and further in view of U.S. Patent No. 5,551,982 to Anderson et al.

10. Selbrede and Carman et al. disclose a film deposition apparatus as described above.

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However, Selbrede and Carman et al. fail to disclose a backside gas constituted of the same gas as part of gas components constituting the process gas.

Anderson et al. teach the use of a backside gas constituted of the same gas as part of gas components constituting the process gas (column 8, rows 17-34) for the purpose of counteracting the dilution effect the backside gas may have on the process gas, especially at the peripheral portion of the target object, where the dilution effect may result in a non-uniform deposition across the surface of the wafer .

It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a backside gas constituted of the same gas as part of gas components constituting the process gas in Selbrede and Carman et al. for the purpose of counteracting the dilution effect the backside gas may have on the process gas as taught by Anderson et al.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km  
April 2, 2002

  
**GREGORY MILLS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**